What is claimed is:

1. A method for optical detection of characteristic quantities of the wavelength-dependent behavior of an illuminated specimen, such as the emission behavior and/or absorption behavior, preferably the fluorescence and/or luminescence and/or phosphorescence and/or enzyme-active light emission and/or enzyme-active fluorescence, comprising:

determining at least one spectral centroid and/or a maximum of the emission radiation and/or of the absorbed radiation.

2. The method according to claim 1, wherein the determination of the centroid and/or of the maximum of the emission radiation of fluorochromes is carried out for distinguishing different dyes and/or for determining the local dye composition of an image point when a plurality of dyes are used simultaneously and/or for determining the local shift of the emission spectrum depending on the local environment to which the dye or dyes is or are attached and/or for measuring emission ratio dyes for determining ion concentrations.

3. The method according to claim 1, wherein the determination of the centroid and/or of the maximum of the reflected or transmitted excitation radiation of fluorochromes is carried out for distinguishing different dyes and/or for determining the local dye composition of an image point when a plurality of dyes are used simultaneously and/or for determining the local shift in the absorption spectrum depending on the local environment to which the dye or dyes is or are attached and/or for measuring the absorption ratio for determining ion concentrations.

4. The method according to claim 1, wherein the emission radiation of the specimen is split by a dispersive element and is detected in a spatially resolved manner in at least one direction.

5. The method according to claim 1, wherein a splitting of the fluorescent radiation is carried out.

6. The method according to claim 1, wherein the radiation reflected or transmitted by the specimen is split by a dispersive element for absorption measurement and is detected in a spatially resolved manner in at least one direction.

7. The method according to claim 1, wherein a spectral weighting is carried out between a plurality of detection channels, summing of the weighted channels of the signals of the detection channels and summing of the detection channels is carried out.

8. The method according to claim 1, wherein the signals of detection channels are weighted in that they are multiplied by a weighting curve, a sum signal is generated in that the sum of the channels taken into account is determined, and a position signal is generated in that the sum of the weighted signals is divided by the sum signal.

9. The method according to claim 8, wherein the weighting curve is a straight line.

10. The method according to claim 1, wherein signals of detection channels are converted and digitally read out and the weighting and summing are carried out digitally in a computer.

11. The method according to claim 10, wherein the weighting and summing are carried out with analog data processing by means of a resistance cascade.

12. The method according to claim 11, wherein the resistances are adjustable.

13. The method according to claim 8, wherein the weighting curve is adjustable.

14. The method according to claim 1, wherein the signals of detector channels are influenced by a nonlinear distortion of the input signals.

15. The method according to claim 1, wherein integration parameters are influenced.

16. The method according to claim 1, wherein the characteristic or response curve of an amplifier is influenced.

17. The method according to claim 8, wherein the position signal and the sum signal are determined in analog, converted, and read out digitally.

18. The method according to claim 7, wherein an upper and a lower signal corresponding to the sum of the signals of the individual channels which are weighted by opposing weighting curves are read out, digitally converted and fed to the computer.

19. The method according to claim 8, wherein the position signal and the sum signal are used to generate an image.

20. The method according to claim 1, wherein a color-coded fluorescence image is generated.

21. The method according to claim 1, wherein a superposition is carried out with additional images.

22. The method according to claim 8, wherein the position signal and the sum signal are combined with a lookup table.

23. The method according to claim 22, wherein representation of different dyes and/or the spread of the generated image is carried out by means of the lookup table.

24. The method according to claim 1, wherein a comparison of a measured signal with a reference signal is carried out via comparators in detection channels and in case the reference signal is not reached and/or is exceeded a change in the operating mode of the detection channel is carried out.

25. The method according to claim 24, wherein the respective detection channel is switched off and/or not taken into account.

26. The method according to claim 1, wherein the relevant spectral region is narrowed in this way.

27. The method according to claim 1, wherein the signals of detection channels are generated by at least one integrator circuit.

28. The method according to claim 1, wherein the signals of detection channels are generated by photon counting and subsequent digital-to-analog conversion.

29. The method according to claim 1, wherein the photon counting is carried out in time correlation.

30. The method according to claim 1, for detection of single-photon and/or multiphoton fluorescence and/or fluorescence excited by entangled photons.

31. The method according to claim 1, with parallel illumination and detection, in ingredient screening, wherein the specimen is a microtiter plate.

32. The method according to claim 1, in a microscope.

33. The method according to claim 1, for detection in a nearfield scanning microscope.

34. The method according to claim 1, for detection of a single-photon and/or multiphoton dye fluorescence in a fluorescence-correlated spectroscope.

35. The method according to claim 1, using confocal detection.

36. The method according to claim 1, using a scanning arrangement.

37. The method according to claim 1, using an X-Y scanner in the illumination means.

38. The method according to claim 1, using an X-Y scan table.

39. The method according to claim 1, using nonconfocal detection.

40. The method according to claim 1, using a scanning arrangement.

41. The method according to claim 1, using descanned detection.

42. The method according to claim 1, using brightfield imaging.

43. The method according to claim 1, using point imaging.

44. The method according to claim 1, using non-descanned detection.

45. The method according to claim 1, using brightfield imaging.

46. The method according to claim 1, using non-scanning, confocal or nonconfocal detection and point imaging or brightfield imaging.

47. The method according to claim 1, using an X-Y scan table.

48. An arrangement for optical detection of characteristic quantities of the wavelength-dependent behavior of an illuminated specimen, particularly the emission behavior and/or absorption behavior, preferably the fluorescence and/or luminescence and/or phosphorescence and/or enzyme-active light emission and/or enzyme-active fluorescence, comprising:

. means for determining at least one spectral centroid and/or a maximum of the emission radiation and/or of the absorbed radiation.

49. The arrangement according to claim 48, wherein the emission radiation of the specimen is split by a dispersive element and is detected in a spatially resolved manner in at least one direction.

50. The arrangement according to claim 48, wherein a splitting of the fluorescent radiation is carried out.

51. The arrangement according to claim 48, wherein the radiation reflected or transmitted by the specimen is split by a dispersive element for absorption measurement and is detected in a spatially resolved manner in at least one direction.

52. The arrangement according to claim 48, wherein a spectral weighting is carried out between a plurality of detection channels, summing of the weighted channels of the signals of the detection channels and summing of the detection channels is carried out.

53. The arrangement according to claim 52, wherein the signals of detection channels are weighted in that they are multiplied by a weighting curve, a sum signal is generated in that the sum of the channels taken into account is determined, and a position signal is generated in that the sum of the weighted signals is divided by the sum signal.

54. The arrangement according to claim 53, wherein the weighting curve is a straight line.

55. The arrangement according to claim 52, wherein signals of detection channels are converted and digitally read out and the weighting and summing are carried out digitally in a computer.

56. The arrangement according to claim 52, wherein the weighting and summing are carried out with analog data processing by means of a resistance cascade.

57. The arrangement according to claim 56, wherein the resistances are adjustable.

58. The arrangement according to claim 56, wherein the weighting curve is adjustable.

59. The arrangement according to claim 53, wherein the position signal and the sum signal are determined in analog, converted, and read out digitally.

60. The arrangement according to claim 52, wherein an upper and a lower signal corresponding to the sum of the signals of the individual channels which are weighted by opposing weighting curves are read out, digitally converted and fed to the computer.

61. The arrangement according to claim 53, wherein the position signal and the sum signal are used to generate an image.

62. The arrangement according to claim 48, wherein a color-coded fluorescence image is generated.

63. The arrangement according to claim 48, wherein a superposition is carried out with additional images.

64. The arrangement according to claim 53, wherein the position signal and the sum signal are combined with a lookup table.

65. The arrangement according to claim 64, wherein representation of different dyes and/or the spread of the generated image is carried out by the lookup table.

66. The arrangement according to claim 48, wherein a comparison of a measured signal with a reference signal is carried out via comparators in detection channels and in case the reference signal is not reached and/or is exceeded a change in the operating mode of the detection channel is carried out.

67. The arrangement according to claim 48, wherein the respective detection channel is switched off and/or not taken into account.

68. The arrangement according to claim 48, wherein the relevant spectral region is narrowed in this way.

69. The arrangement according to claim 48, wherein signals of detection channels are generated by at least one integrator circuit.

70. The arrangement according to claim 48, wherein signals of detection channels are generated by photon counting and subsequent digital-to-analog conversion.

71. The arrangement according to claim 70, wherein the photon counting is carried out in time correlation.

72. The arrangement according to claim 48, for detection of single-photon and/or multiphoton fluorescence and/or fluorescence excited by entangled photons.

73. The arrangement according to claim 48, with parallel illumination and detection, in ingredient screening, wherein the specimen is a microtiter plate.

74. The arrangement according to claim 48, incorporated in a microscope.

75. The arrangement according to claim 74, for detection in a nearfield scanning microscope.

76. The arrangement according to claim 48, for detection of a single-photon and/or multiphoton dye fluorescence in a fluorescence-correlated spectroscope.

77. The arrangement according to claim 48, incorporating confocal detection.

78. The arrangement according to claim 48, including a scanning arrangement.

79. The arrangement according to claim 48, including an X-Y scanner in the illumination source.

80. The arrangement according to claim 48, including an X-Y scan table.

81. The arrangement according to claim 48, incorporating nonconfocal detection.

82. The arrangement according to claim 48, with descanned detection.

83. The arrangement according to claim 48, with brightfield imaging.

84. The arrangement according to claim 48, with point imaging.

85. The arrangement according to claim 48, with non-descanned detection.

86. The arrangement according to claim 48, with non-scanning, confocal or nonconfocal detection and point imaging or brightfield imaging.